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Discovery of *Helorus brethesi* Oglobin, 1928 (Hymenoptera, Heloridae) in Honduras and Guatemala

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Abstract

We report the first records of the family Heloridae in Honduras and Guatemala. We illustrate and report the presence of *Helorus brethesi* Oglobin, 1928 as the only species known from the Neotropics. We include habitus photographs and updated distributional patterns of the species across the Neotropics.

Keywords

Neotropics, new records, Proctotrupoidea, wasps

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Introduction

Heloridae (Hymenoptera, Proctotrupoidea) is a small family of endoparasitic wasps with the particular habit of solitary koinobionts in larvae of species of *Chrysopa* Leach in Brewster, 1815 (Neuroptera, Chrysopidae) (Clancy 1946). The family had a broader diversity in the past, with 10 genera and 20 species from the Jurassic or Cretaceous and one species from the Oligocene (Muona 2020). There are only 19 extant species, all in the genus *Helorus* Latreille, 1802 (Pschorn-Walcher 1955; Townes 1977; van Achterberg 2006; Izadizadeh et al. 2015; Zhang et al. 2020). Based on literature data, *Helorus brethesi* Oglobin, 1928 is the only species of the family currently known from the Neotropics.

During an exploratory online search in the Global Biodiversity Information Facility (GBIF), we noticed several records of *H. brethesi* occurring in Neotropical countries, including Chile, Honduras, and Guatemala. These records have not been published in the literature. In addition, there are only 20 scientific publications on this species (Añino et al. 2016) despite its broad distribution extending from Mexico to Argentina.

Here, we produce an updated distributional database of the species in the Neotropics by the corroboration of informal records and inclusion of our new records from Honduras and Guatemala (records provided by open access initiatives such as GBIF).

Methods

We searched the GBIF platform, using the key word "Heloridae", which generated 1008 occurrences. Those collections that had records from the Neotropical region

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were contacted. The presence of *Helorus brethesi* in Honduras (Fig. 1A–C) and Guatemala (Fig. 2A–C) was confirmed.

The entomological collections examined are the following:

CMNH: Cleveland Museum of Natural History, OH, USA.
MSU: Albert J. Cook Arthropod Research Collection, Michigan State University, USA.
MZLU: Lund Museum of Zoology, Sweden.

Results

Helorus brethesi Ogloblin, 1928

Helorus brethesi Ogloblin 1928: 77.
Figures 1–3

Type material. Loreto, Misiones, Argentina (Ogloblin 1928; Townes 1977).

New records. HONDURAS – **Yoro** • Palo de Comba; 15°11′N, 087°39′W; 12.IX.1995, R. Cave leg.; 2♀, MZLU 00174277, MZLU00174278. GUATEMALA – **Guatemala** • Puerta Parada, 1850 m, road to El Salvador, 23.II–1.III.2008, Schuster leg.; 1♀, CMNHENT0017915.

Identification. Specimens were identified by the following combination of diagnostic features. Color: head and metasoma blackish; mesosoma mostly red, except tegula whitish, mesopleuron red-black, metapleuron black and propodeum mostly blackish; antennae, mandibles and legs mainly stramineous to pale yellow-brown; wings hyaline. Head: frons almost smooth, punctures inconspicuous; antenna with 15 segments; mandibles sickle-shaped. Mesosoma: mesoscutum with trans-scutal suture developed, integument mostly smooth except with sparse unremarkable punctures; scutellum smooth; mesopleuron with a row of small foveae behind the prepectal carina. Metasoma: segment one about 3.4× as long as wide and petiolate, tergum one with longitudinal striae and sparse punctures at the base and apex, other areas almost smooth.

Distribution (Fig. 3; Appendix Table A1). Argentina (Ogloblin 1928; Townes 1977); Brazil (Townes 1977; Dorfey et al. 2011); Colombia (Sosa-Calvo and Campos 2005); Panama (Añino et al. 2016); Costa Rica (Masner 1995); Guatemala; Honduras (present study); Mexico (Townes 1977).

Comments. We contacted Anthony I. Cognato, MSU, who rectified the record of a specimen of *H. brethesi* from Chile (MSUC_ARC_145821). The identification was erroneus; it's not a helorid (A.I. Cognato pers. comm.).

Discussion

The distribution of *Helorus brethesi* in the Neotropical region appears very broad (Fig. 3), although scattered, most probably due to insufficient systematic investigations, as with many other hymenopteran groups. The presence of this species in Guatemala and Honduras was largely expected based on the previous distributional pattern.

Detailed study of external morphological features and the inclusion of good quality photographs of the habitus are necessary for the correct identification of species. For example, the mesonotum, petiolus, femora, and pterostigma represent structures with diagnostic characters at the species level (Pschorn-Walcher 1955; Townes 1977; Prpic-Schäper 2010). Most of the literature that we consulted need to be updated with good quality figures and better delimited morphological characters.

In preparation of the present paper, we note the great value of entomological collections, as well as initiatives such as GBIF, which provides a link between biological collections and naturalists in order to determine distributional patterns of species. It is important that museum records are confirmed by a specialist, which is essential to avoid mistaken identifications and errors in

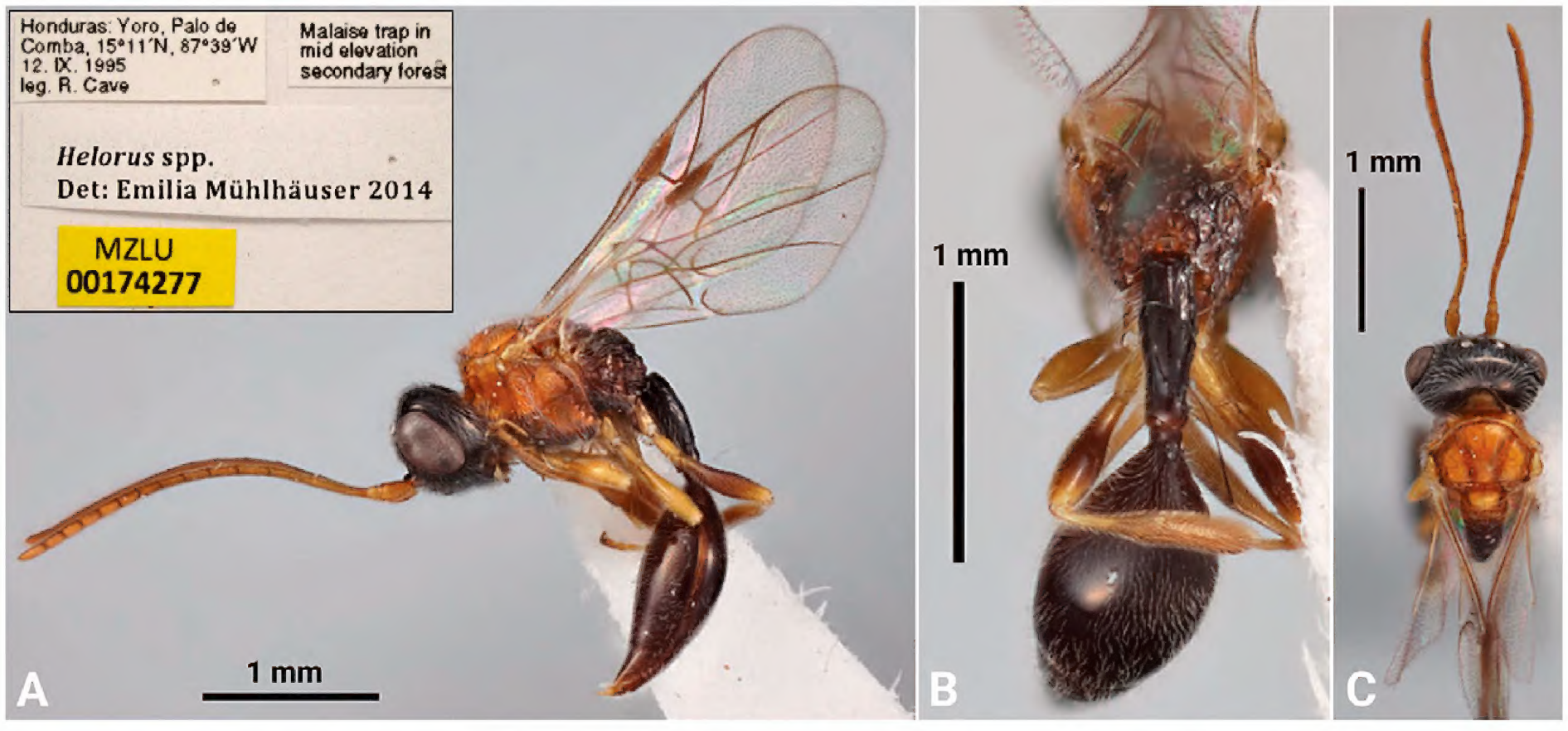

Figure 1. *Helorus brethesi* Oglobin, 1928 from Honduras. **A.** Lateral view and specimen labels. **B.** Propodeum and metasoma, dorsal view. **C.** Head and mesosoma, dorsal view. Photograph: MZLU, Sweden.

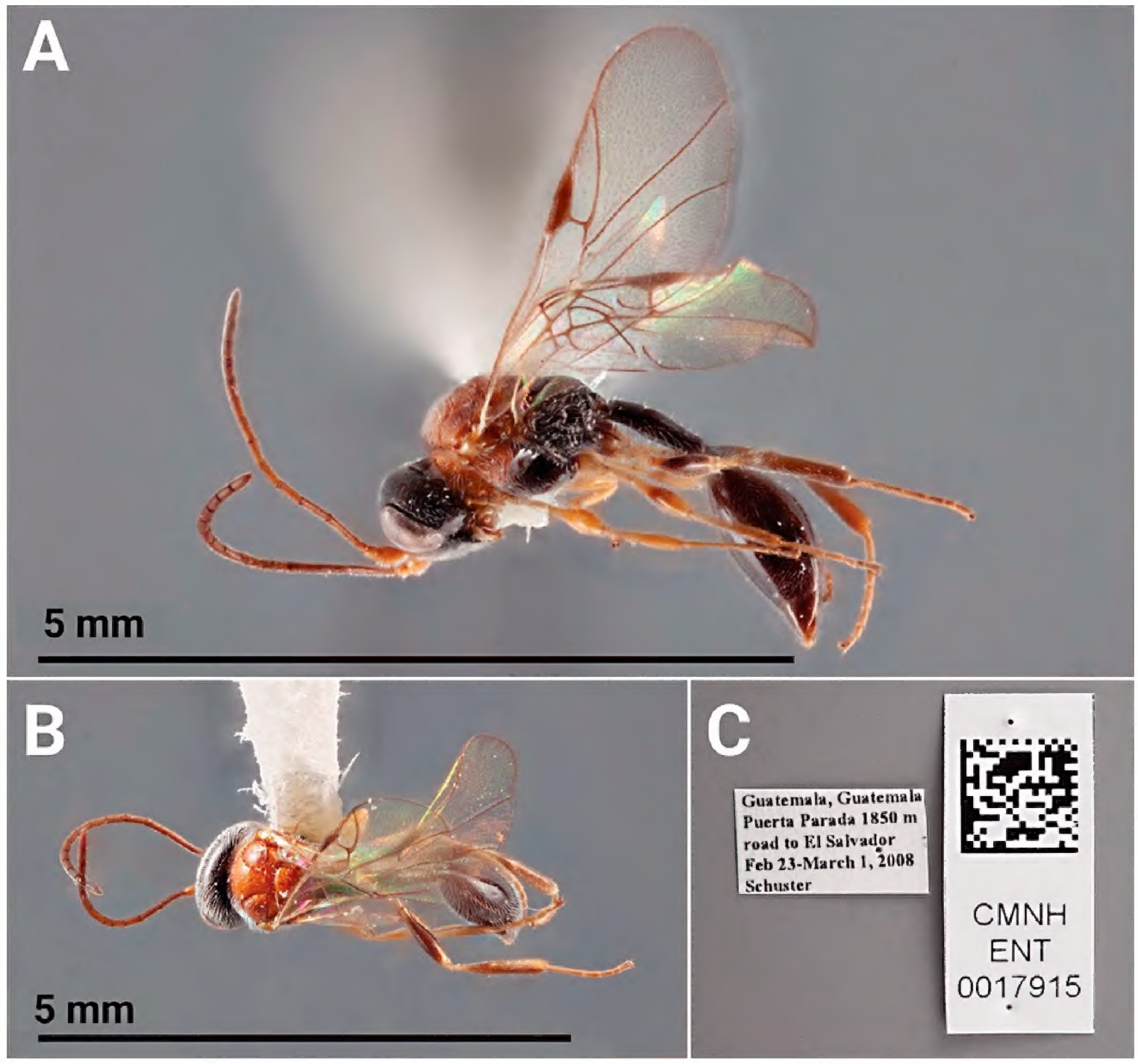

Figure 2. *Helorus brethesi* Oglobin, 1928 from Guatemala. **A.** Dorsal view. **B.** Lateral view. **C.** Specimen labels. Photographs: Nicole Gunter (CMNH).

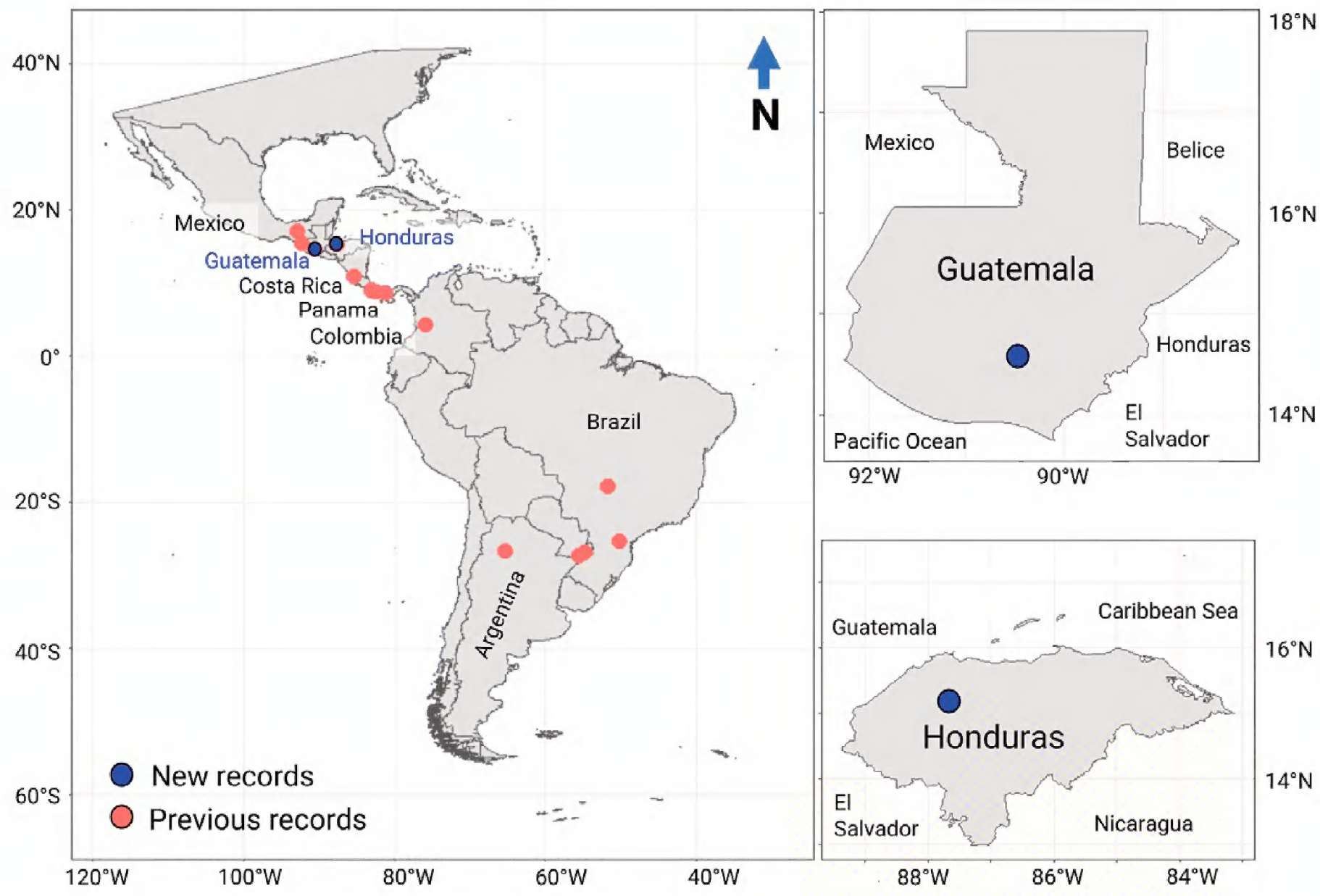

Figure 3. Map showing the known distribution of *Helorus brethesi* Oglobin, 1928, including first records from Honduras and Guatemala.

distributions. Digitization is the future of natural history collections, which will make collections accessible and open to international collaboration, and facilitate updating. Digitization will also promote their persistence over time and provides a backup in the case of catastrophes. Digitization of natural history collections opens a broad range of opportunities and the development of new disciplines such as bioinformatics.

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Authors' Contributions

Conceptualization: YJA. Investigation: PECC, YJA, RAC. Writing – original draft: RAC, PECC, YJA. Visualization: YJA. Writing – review and editing: YJA, RAC.

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Appendix

Table A1. Specimens of *Helorus brethesi* from the Neotropics.

# specimens	Sex	Location	Country	Latitude	Longitude	Reference
1	Undetermined	Cerro Frantzius, Puntarenas	Costa Rica	09.0551	−082.9895	https://www.gbif.org/es/occurrence/1255204577
2	Undetermined	Area de Conservacion Guanacaste	Costa Rica	10.7630	−085.3340	https://www.gbif.org/es/occurrence/2633227173
1	Female	Puerta Parada, Guatemala	Guatemala	14.5667	−090.4667	https://www.gbif.org/es/occurrence/1313471156
1	Undetermined	Boquete, Chiriquí	Panamá	08.6986	−082.4467	https://www.gbif.org/es/occurrence/1801002395
1	Undetermined	Misiones	Argentina	−27.3166	−055.5333	https://www.gbif.org/es/occurrence/857851314
2	Female	Palo de Comba, Yoro	Honduras	15.1833	−087.6500	https://www.flickr.com/photos/tags/mzlu00174277
1	Male	Misiones	Argentina	−26.8781	−054.6558	Ogloblin 1928
7	Male, Female	Horco Molle and Tucumán	Argentina	−26.7657	−065.3092	Townes 1977
1	Male	Jatai, Goiás	Brasil	−17.8453	−051.6515	Townes 1977
1	Female	Palmeira	Brasil	−25.4125	−050.0501	Dorfey et al. 2011
1	Female	Quindío, Genova	Colombia	04.1950	−075.7653	Sosa-Calvo and Campos 2005
1	Male	Jardín Botánico Las Cruces, Puntarenas	Costa Rica	08.7845	−082.9603	Masner 1995
3	Female	Estación Altamira, Puntarenas	Costa Rica	09.0307	−083.0100	Añino et al. 2016
1	Female	Cerro Frantzius, Puntarenas	Costa Rica	09.0555	−082.9686	Añino et al. 2016
2	Female	Santa Fé, Veraguas	Panama	08.5426	−081.1301	Añino et al. 2016
1	Female	Motozinha, Chiapas	Mexico	15.3686	−092.2284	Townes 1977
1	Female	Yerba Buena, Chiapas	Mexico	16.9124	−092.8742	Townes 1977